

The West Virginia Stream and Wetland Valuation Metric

Background

As indicated in the U.S. Army Corps of Engineer's (USACE) regulations [33 CFR 332.8(b)], the district engineer will establish an Interagency Review Team (IRT) to review documentation for the establishment and management of mitigation banks and in-lieu fee programs. The IRT consists of the following federal and state resource agencies: U.S. Army Corps of Engineers (USACE) Huntington and Pittsburgh Districts, U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS), West Virginia Department of Environmental Protection (WVDEP) and West Virginia Division of Natural Resources (WVDNR). The primary role of the IRT is to facilitate the establishment of mitigation banks and/or in-lieu fee programs through the development of mitigation banking or in-lieu fee program instruments. The IRT reviews draft prospectus, final prospectus, instruments, and other documents and provides comments to the USACE. The USACE Huntington District (Regulatory Branch) is the lead district for the state of West Virginia and chairs the WV IRT.

New Rule on Compensatory Mitigation

The New Rule on Compensatory Mitigation for Losses of Aquatic Resources, effective June 9, 2008, encourages the use of "an appropriate assessment method" (e.g., hydrogeomorphic approach to wetlands functional assessment, index of biological integrity) or other suitable metric to be used to assess and describe the aquatic resource types that will be restored, established, enhanced and/or preserved by the mitigation bank or in-lieu fee project. The principal units for credits and debits are acres, linear feet, functional assessment units, or other suitable metrics of particular resource types. Functional assessment units or other suitable metrics may be linked to acres or linear feet." In the absence of comprehensive stream and wetland functional assessment methodologies,¹ for West Virginia the IRT has been challenged to develop a suitable metric to consistently correlate levels of proposed impacts (streams and wetlands) with all forms of compensatory mitigation including Mitigation Banking, ILF Program and Permittee Responsible (on-site and off-site). The development of this tool has been completed and it is identified as the West Virginia Stream and Wetland Valuation Metric (SWVM). The SWVM is a tool utilized to synthesize correlations derived from multiple established individual assessment methodologies. The SWVM has been developed as a Microsoft Excel spreadsheet, which requires project or site specific data (for an impact as well as any proposed compensatory mitigation). For example, some information required for streams includes: the extent of a proposed impact; a broad spectrum of physical,

¹ The stream portion of the Stream and Wetland Valuation Metric is anticipated to be superseded by completion of the Comprehensive Stream Assessment Methodology being developed by the U.S. Army Corps of Engineers' Engineer Research and Development Center.

chemical and biological indicators; and other factors including temporal loss and mitigation site protection. Individual assessment methodologies utilized within the state of West Virginia and incorporated into the SWVM for streams include the USEPA Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers² (RBP) and A Stream Condition Index for West Virginia Wadeable Streams³ (WVSCI) as well as water quality data utilized by the WVDEP (Water Quality Data Sheet). These individual assessments are utilized together within the SWVM to interpret the physical, chemical and biological integrity of waters of the United States. The SWVM utilizes this data to generate an index score which is multiplied by the linear feet to result in a unit score. The index score ranges from 0 (poor condition) to 1.0 (best condition). Overall, each of the three indicators are provided equal weight. Presently, no individual or comprehensive assessment methodologies exist within the state of West Virginia for assessing wetlands⁴. Therefore, the wetland portion of the SWVM has been designed based upon the classification of wetland being assessed and acreage, which is consistent with the WVDEP ratios for replacement of wetlands. The SWVM has been designed to comply with the national policy of “no net loss”. Applicants are encouraged to utilize and provide the best available information and science applicable to assist this office in evaluating proposed unavoidable impacts and compensatory mitigation.

Please note the SWVM spreadsheet, instruction sheet as well as any future updates and/or revisions will be made available on the USACE Huntington District website at <http://www.lrh.usace.army.mil/permits/>. In addition, a link to the USEPA RBP and an electronic copy of the WVSCI are also provided on this website.

Applicability

The SWVM is not intended to be the only tool⁵ utilized to evaluate impacts (or debits) and compensatory mitigation (or credits). The SWVM will be required for evaluating Mitigation Banks, In-Lieu Fee Projects as well as USACE Section 404 applications proposing impacts to our nation’s water resources, which necessitate the following: a pre-construction notification (as indicated in the Public Notice 2008-6 Nationwide Permits for the State of West Virginia) to the resource agencies; proposals requiring a public notice (i.e. Individual Permit, Mitigation Bank or In-Lieu Fee); or other proposals as

² Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

³ Barbour, M.T., Burton, June, Gerritsen, Jeroen. March 28, 2000 (Revised July 21, 2000). A Stream Condition Index for West Virginia Wadeable Streams. EPA 68-C7-0014. U.S. Environmental Protection Agency, Region 3 Environmental Services Division and U.S. Environmental Protection Agency, Office of Science and Technology, Office of Water.

⁴ The wetland portion of the SWVM may be superseded by completion of a functional assessment methodology currently under development by the West Virginia Division of Natural Resources (WVDNR).

⁵ Implementation of the SWVM is not intended to supersede the Interim Functional Assessment Approach (IFAA) for High Gradient Streams within West Virginia prepared by the U.S. Army Engineer Research and Development Center (ERDC). The IFAA remains as a separate rapid assessment tool for headwater streams in West Virginia and is designed to evaluate the extent to which key physical and biological processes are operating or have been disrupted within aquatic ecosystems. Therefore, the SWVM shall be provided, where applicable, in conjunction with the IFAA.

determined applicable by the USACE. The USACE and the IRT recommend applicants utilize the best available information and science applicable.

Streams and/or stream segments may be assessed consistent with the USACE's standard Rapanos-method of delineating streams. Where atypical situations exist, this metric may not be applicable or a reference standard baseline condition may be assumed.

Instructions for Completing the SWVM:

The SWVM has been designed to indicate where data entry is required. All cells or fields highlighted in red shall be populated by the applicant or consultant. Below are descriptions of the information or data being requested:

Stream Valuation Metric:

Cell B1 [USACE File No./Project Name] -Enter USACE File Number as well as the overall project name. Mining-related projects should also include the SMCRA Permit No in this field.

Coordinates

Cell L1 [Lat.] – Enter latitude in NAD 83 Decimal Degrees

Cell N1 [Long.] – Enter longitude in NAD 83 Decimal Degrees

Cell R1 [Date] – Enter date of the assessment being performed

Cell B2 [Stream Classification] – Enter the classification of stream being assessed. Choices are provided from the drop-down list (i.e. ephemeral, intermittent or perennial)

Cell L2 [Stream/Site ID and Site Description] – Enter the stream name, stream segment identifier (which may correlate to a drawing), % streambed slope, watershed acreage and riparian condition (i.e. mature tree stratum)

Cell R2 [Precipitation Past 48 Hrs] – Enter the past 48 hrs precipitation for the site being assessed

Cell B3 [Stream Impact Length] – Enter the length of the impact

*Note: when using this metric to only assess mitigation (i.e. preservation) no impact length should be entered

Cell F3 [Form of Mitigation] – Enter the form of mitigation. Choices are provided from the drop-down list

Cell L3 [Weather Conditions] – Enter the weather conditions from the site during the assessment

Cell R3 [Mitigation Length] – Enter the linear feet of the compensatory mitigation proposed

COLUMN No. 1 – Impact Existing Condition (Debit) – This column establishes the baseline conditions of the proposed impact site. All projects proposing an impact (debit) to waters of the U.S. shall enter data in this column, as follows:

Part I – Physical, Chemical and Biological Indicators

Cells D10 – D19 [Physical Indicator] - Indicate the physical condition of the stream by applying the USEPA RBP. The Physical descriptor for streams relies upon the data collected for the USEPA RBP Stream Data Sheet. This part of the metric allows the user to choose the High Gradient or Low Gradient Stream Data Sheet, as applicable. This portion of the Part I is required for all stream classifications.

Cells D25, D28 and D31 [Chemical Indicator] - Indicate the chemical condition or water quality of the stream by inputting the data, which is based upon and replicates the WVDEP Water Quality Data Sheet. This portion of Part I shall be completed for perennial, intermittent and ephemeral stream classifications (where applicable). Ephemeral stream water quality data shall be obtained within the reach being assessed or immediately downstream. When the immediate downstream method is necessary this shall be noted in Cell L2 or at the bottom of the assessment sheet. In the event data for these fields cannot be obtained, good water quality will be assumed.

Cell D36 [Biological Indicator] - Indicate the biological condition of the stream by inputting the data based upon the West Virginia Stream Condition Index (WVSCI) of the WVDEP Save Our Stream Protocol. It is recommended this portion of Part I be completed for perennial and intermittent stream classifications. In the event this data cannot be obtained (i.e. ephemeral stream), the metric will generate an index score based upon the Physical and Chemical Indicators.

COLUMN No. 2 – Mitigation Existing Condition (Credit) - All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 2. This column is utilized to establish the baseline conditions for the mitigation site.

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

COLUMN No. 3 – Mitigation Projected Upon Completion (Credit) - All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 3. This column is utilized to establish the projected condition of the site once the mitigation measures have been completed (on the ground).

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

COLUMN No. 4 – Mitigation Projected Upon Maturity (Credit)

All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 4. This column is utilized to establish the projected condition of the site at maturity. The full restoration of a riparian buffer zone may require 40 or more years of sustained growth to contribute detritus and large woody debris and provide light and temperature regulation.

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

PART II – Index and Unit Score - No data entry is required in Part II, the Index Score is multiplied by the linear feet of impact (debit) to generate a raw Unit Score.

PART III– Sub-Index Correlation - No data entry is required in Part III. These Sub-Index scores are provided for correlating the Impact Existing Condition with the Mitigation Existing Condition while continuing to track the projected scores through Mitigation Projected Upon Completion and Mitigation Projected At Maturity.

DEFAULT VALUES: A default value of “0” will appear when assessing only compensatory mitigation (i.e. Mitigation Banks and In-Lieu Fee Projects).

Part IV- Factors

Cell C8 [Temporal Loss-Construction] - Enter the number of years reflecting the duration of aquatic functional loss between the time of impact (debit) and completion of compensatory mitigation (credit). For example, if Permittee-Responsible On-site mitigation is proposed and it will be five (5) years before the mitigation will be completed then enter a “5”.

DEFAULT VALUES: The default value for ILF is 4 years and Mitigation Banking (providing Mitigation Bank credits have been approved and are available) is 0 years.

Cell C19 [Temporal Loss-Maturity] - Enter the number of years representing the period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. the full restoration of a riparian buffer zone may require 40 or more years of sustained growth to contribute detritus and large woody debris and provide light and temperature regulation).

Cell G7 [Long-term Protection] - Enter the number of years representing the period of protection proposed for the mitigation site. Long-term protection is obtained via conservation easements or deed restrictions to ensure sustainable gains in values. Perpetual protection should be entered as “101” or “Perpetual”.

DEFAULT VALUES: The default value for Mitigation Banking and/or ILF is “Perpetual” since these projects are required to obtain perpetual protection.

Part V- Index to Unit Score Comparison - No data entry is required. This part is utilized as a reference for obtaining the Final Index Score, linear feet of impact, Unit Score and the estimated costs for In-Lieu Fee (for comparison purposes). The Unit Score (debit) has been adjusted to compensate for the factors input in Part IV and is the final figure necessary to be entirely offset by mitigation (credit).

Part VI- Comparison of Unit Scores and Projected Balance - No data entry is required. This part depicts the “Final Unit Score (debit)” in comparison with the Mitigation Existing Condition (credit), Mitigation Projected Upon Completion (credit) and the Mitigation Projected at Maturity (credit). The balance of the “Mitigation Projected at Maturity” shall be equal to or greater than the “Final Unit Score (debit)” to adequately offset the proposed impacts and be compliant with the national policy of “no net loss”.

Cell A37 [Site] – Enter the Stream ID from Cell L2.

*Note: The yellow highlighted cells (Cells B37, C37 and D37) may be cut and copied to the next tab “Multiple Site Unit Comparison” for compiling data on multiple streams or stream segments. For submittal purposes, the Multiple Site Unit Comparison should be accompanied by individual Stream Valuation Metric spreadsheets for each stream or stream segment.

Wetland Valuation Metric:

Cell B1 [USACE File No./Project Name] -Enter USACE File Number as well as the overall project name. Mining-related projects should also include the SMCRA Permit No in this field.

Coordinates

Cell L1 [Lat.] – Enter latitude in NAD 83 Decimal Degrees

Cell N1 [Long.] – Enter longitude in NAD 83 Decimal Degrees

Cell L2 [Stream/Site ID and Site Description] – Enter the wetland name, wetland identifier (which may correlate to a drawing), watershed acreage and riparian condition (i.e. mature tree stratum)

Cell B3 [Wetland Impact Acreage] – Enter the acreage of the impact

Cell F3 [Form of Mitigation] – Enter the form of mitigation. Choices are provided from the drop-down list

Cell M3 [Mitigation Acreage] – Enter the acreage of the compensatory mitigation proposed

Cell B4 [Date] – Enter date of the assessment being performed

Cell G3 [Weather Conditions] – Enter the weather conditions from the site during the assessment

Cell M4 [Precipitation Past 48 Hrs] – Enter the past 48 hrs precipitation for the site being assessed

Part I- Wetland Indicators

Cells A7 – A18 [Wetland ID] - Enter the wetland identification for each wetland impact (which may correspond to a drawing)

Cells B7 – B18 [Existing Classification] – Enter the wetland classification being assessed. Choices are provided from the drop-down list.

Cells D7 – D18 [Impacts] – Enter the amount of impacts (in acres) for each wetland.

Cells F7 –F18 [Mitigation Classification] – Enter the wetland classification being mitigated. Choices are provided from the drop-down list.

Part II- Unit Scores - No data entry is required. This part indicates the total Unit Scores or Replacement Units for each individual classification of wetlands.

Part III- Advanced Mitigation - Enter a “Yes” or “No” to indicate compensatory mitigation has been completed and determined sustainable in advance of any proposed impacts.

DEFAULT VALUES: Approved forms of advanced mitigation determined to be sustainable may be provided to offset impacts on a 1:1 ratio, within the same wetland classification.

Estimated In-Lieu Fee Costs – A comparison of the In-Lieu Fee costs associated with the proposed impacts is provided for reference purposes.

Part IV- Factors

Cell C6 [Temporal Loss-Construction] - Enter the number of years reflecting the duration of aquatic functional loss between the time of impact (debit) and completion of compensatory mitigation (credit). For example, if Permittee-Responsible On-site mitigation is proposed and it will be five (5) years before the mitigation will be completed then enter a “5”.

DEFAULT VALUES: The default value for ILF is 4 years and Mitigation Banking (providing Mitigation Bank credits have been approved and are available) is 0 years.

Cell C17 [Temporal Loss-Maturity] - Enter the number of years representing the period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function.

Cell H5 [Long-term Protection] - Enter the number of years representing the period of protection proposed for the mitigation site. Long-term protection is obtained via

conservation easements or deed restrictions to ensure sustainable gains in values. Perpetual protection should be entered as “101” or “Perpetual”.

DEFAULT VALUES: The default value for Mitigation Banking and/or ILF is “Perpetual” since these projects are required to obtain perpetual protection.

Part V- Final Unit Score - This part is utilized as a reference for obtaining the Replacement Index (debit), Final Unit Score to Offset (credit) and the balance. The Final Unit Score has been adjusted to compensate for the factors input in Part IV and is the final figure necessary to be entirely offset by mitigation (credit).

Cell D25 [Form of Mitigation] – Enter the form of mitigation from the drop-down list.
Cells H25 – H28 [Applicant Input Mitigation (acres)] - Enter the acreage for each classification of wetland mitigation being proposed. The balance should be equal to or greater than the “Final Unit Score to Offset (credit)” to provide an adequate level of compensatory mitigation for offsetting the proposed impacts and be compliant with the national policy of “no net loss”.